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SPACE SHUTTLE PROGRAM
SHUTTLE AVIONICS INTEGRATION LABORATORY

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SHUTTLE AVIONICS INTEGRATION LABORATORY.
VOLUME 7: LOGISTICS MANAGEMENT PLAN
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LOGISTICS MANAGEMENT PLAN



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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Contract NAS9-13834

FOREWORD

Documents which provide a basis for management of the Shuttle Avionics Integration Laboratory (SAIL) have been developed to implement the requirements set forth in the Space Shuttle Level II Program Definition and Requirements Documents and in other applicable governing documentation. SAIL requirements, directives, procedures, et cetera, which are controlled by the SAIL Manager, are documented within the listed volumes of JSC-08663.

All NASA and contractor organizations involved in SAIL activities must adhere to the requirements in these baselined volumes. Any deviations from or changes to such requirements must be submitted along with full justification to the SAIL Manager. These management volumes will be maintained current by change pages or revisions as required.

This volume, Volume 7 of JSC-08663, defines the logistics requirements for SAIL. The volumes of JSC-08663 are as follows:

<u>VOLUME</u>	<u>TITLE</u>
1	SAIL Project Master Plan, and Schedule Supplement
2	Configuration Management Plan
3	Documentation Management Plan
4	Data Management Plan
5	Safety, Reliability, and Quality Assurance Management Plan
6	Operations Management Plan
7	Logistics Management Plan
8	Computer Systems and Software Management Plan
9	Interface Control Documents Management Plan

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1.0 INTRODUCTION

The Logistics Management Plan (LMP) for the Shuttle Avionics Integration Laboratory (SAIL) defines the organization, disciplines, and methodology for managing and controlling logistics support to the SAIL.

1.1 SCOPE

SAIL logistics support planning involves the management of those elements necessary to assure the effective and economical support of the SAIL systems and equipment at all levels of maintenance for its programmed life cycle. Those elements requiring management include maintainability and reliability, maintenance planning, support and test equipment, supply support, transportation and handling, technical data, facilities, personnel and training, funding, and management data.

1.2 AUTHORITY

The SAIL Project Office will provide the overall direction required to implement a logistics support system for the SAIL.

1.3 APPLICABILITY

This plan is applicable to JSC, SAIL, and contractor organizations and other NASA centers involved in the integrated logistics support to the SAIL.

2.0 LABORATORY DESIGN/LOGISTICS SUPPORT INTERFACE

This section will detail the relationship between SAIL design and logistics support program events for coordinated management decisions.

2.1 SAIL DEFINITION AND LOGISTICS SUPPORT REQUIREMENTS

This section will discuss the definition of logistics support requirements estimates as an essential element of the initial SAIL design, development, and implementation activities in order to permit early comparison between various life cycle support cost alternatives.

2.2 LOGISTICS SUPPORT MANAGEMENT EVENTS

This section and subsequent sections will discuss and define the logistics support management events and decisions that occur concurrently with SAIL implementation and operational phase events. Such management events might include but not necessarily be limited to:

- o Define logistics support capability requirements
- o Estimate logistics support capabilities
- o Develop support alternatives
- o Prepare logistics support program change request
- o Develop support plan requirements
- o Develop logistics support plan
- o Establish logistics support criteria for proposal evaluation
- o Evaluate logistics support proposals
- o Establish support development plan
- o Monitor and guide logistics support effort
- o Evaluate impact of proposed SAIL or logistics support changes
- o Conduct demonstration and validation of support requirements
- o Update logistics support plan
- o Award logistics support resources contracts
- o Complete support requirements specification

3.0

MAINTAINABILITY AND RELIABILITY

This section will discuss the early consideration of equipment design and support characteristics which will provide the desired SAIL effectiveness at optimum cost.

3.1

MAINTAINABILITY AND RELIABILITY EVENTS

This section and subsequent sections will discuss and define the maintainability and reliability events that require logistics management direction. These events should include the following:

- o Prepare maintainability and reliability portion of logistics support capability estimate
- o Perform maintainability and reliability trade-off studies
- o Establish gross maintainability and reliability requirements
- o Establish maintainability and reliability evaluation criteria
- o Perform maintainability and reliability evaluation
- o Define maintainability and reliability design guidelines
- o Update maintainability and reliability plan requirements
- o Allocate maintainability and reliability design goals
- o Demonstrate attainment of maintainability and reliability goals
- o Adjust maintainability and reliability goals

4.0

MAINTENANCE PLANNING

This section will define logistics support requirements and plans for maintenance to satisfy SAIL operational goals.

4.1

MAINTENANCE PLANNING EVENTS

This section and subsequent sections will define and discuss maintenance planning events that require logistics management direction. These events may include but not necessarily be limited to the following:

- o Prepare maintenance planning portions of logistics support capabilities estimate
- o Evaluate possible maintenance concepts
- o Establish maintenance concepts
- o Develop maintenance plan requirements
- o Establish maintenance evaluation criteria
- o Evaluate proposed maintenance plan
- o Approve maintenance plan
- o Conduct maintenance engineering analysis
- o Evaluate maintenance demonstration of a prototype
- o Update maintenance plan
- o Conduct maintenance support demonstration and evaluation
- o Identify and analyze support deficiencies
- o Update maintenance plan

5.0

SUPPORT AND TEST EQUIPMENT

This section discusses the necessity of assuring the availability of required tools and test equipment to perform maintenance functions.

5.1

SUPPORT AND TEST EQUIPMENT EVENTS

This section and subsequent sections define and discuss the support and test equipment events that require management direction. These events may include the following:

- o Prepare support equipment portion of logistics support capabilities estimate
- o Perform support and test equipment trade-off
- o Establish support equipment concept
- o Determine preliminary support equipment plan requirements
- o Establish support equipment plan evaluation criteria
- o Evaluate support equipment proposals
- o Approve support equipment plan
- o Update support equipment requirements
- o Design support equipment
- o Verify availability of support equipment
- o Award support equipment contract
- o Update support equipment requirements
- o Accomplish service test of support equipment
- o Identify support equipment deficiencies
- o Initiate action to modify support equipment
- o Procure additional support equipment
- o Modify support equipment
- o Issue new support equipment

6.0 SUPPLY SUPPORT

This section discusses the provision of timely and adequate spares, repair parts, and special supplies to satisfy SAIL operations and maintenance functions. This section will also cover raw stock provisioning and local fabrication and procurement.

6.1 SUPPLY SUPPORT EVENTS

This section and subsequent sections will define and discuss supply support events requiring management direction. These events may include the following:

- o Prepare supply support portion of logistics support estimate
- o Perform supply support trade-offs
- o Establish supply support concepts
- o Develop supply plan requirements
- o Establish provisioning requirements criteria
- o Evaluate provisioning and support proposals
- o Approve provisioning plan
- o Prepare provisioning documents for test
- o Approve items provisioned for test
- o Procure spares, repair parts, and special supplies for testing, training, and to support operations
- o Verify suitability of spares and repair parts
- o Validate/update provisioning plan
- o Identify supply support deficiencies
- o Update provisioning plan
- o Procure spares and repair parts identified by change/modifications decisions

7.0 TRANSPORTATION AND HANDLING

This section discusses the early consideration of transportability during design; and selection of optimum transportation, handling, packaging, and preservation materials.

7.1 TRANSPORTATION AND HANDLING EVENTS

This section and subsequent sections define and discuss the transportation and handling events that require management direction. These events may include the following:

- o Prepare transportation and handling portion of logistics support capability estimates
- o Evaluate effect of support alternatives on transportation and handling
- o Establish transportation and handling concepts
- o Provide transportation and handling input to support plan requirements
- o Establish transportation and handling evaluation criteria
- o Evaluate transportation and handling proposals
- o Approve transportation and handling plan
- o Update transportation and handling requirements
- o Input transportation and handling specifications to SAIL system support plans
- o Award special transportation and handling contracts and/or agreements
- o Evaluate transportation and handling of hardware
- o Update transportation and handling requirements
- o Identify deficiencies in transportation and handling
- c Update transportation and handling specifications

8.0

TECHNICAL DATA

This section will identify and record for on-call use all technical information necessary for the efficient operation and support of equipment.

8.1

TECHNICAL DATA EVENTS

This section and subsequent sections define and discuss the technical data events that require management direction. These events typically would include the following:

- o Prepare technical data portion of logistics support capabilities estimate
- o Perform technical data trade-offs
- o Establish technical data concept
- o Provide technical data plan requirements
- o Establish technical data program evaluation criteria
- o Evaluate technical data proposals
- o Approve technical data plan
- o Begin preparation of preliminary technical data
- o Verify suitability of preliminary technical data
- o Procure formal technical data
- o Verify suitability of technical data
- o Verify/update technical data plan
- o Identify technical data deficiencies
- o Update technical data

9.0 FACILITIES

Where appropriate this section will discuss the identification, selection, modification, and programming of facilities to accomplish the logistics support mission.

9.1 FACILITIES EVENTS

This section and subsequent sections will define and discuss facilities events requiring management direction. Typical facilities events which may or may not apply to SAIL would include the following:

- o Evaluate requirements and define facilities support capability
- o Perform facility trade-offs
- o Establish facilities concept
- o Provide facilities plan requirements
- o Begin design or modification plans
- o Establish facility plan evaluation criteria
- o Evaluate proposals for facilities construction or modification
- o Approve construction or modification
- o Begin facility construction or modification
- o Complete facility construction or modification
- o Activate operational support facilities
- o Validate/update facilities plan
- o Identify facilities deficiencies
- o Initiate action to modify facilities

10.0 PERSONNEL AND TRAINING

This section will discuss the identification and programming of skills, personnel, and training to satisfy SAIL operations and maintenance requirements.

10.1 PERSONNEL AND TRAINING EVENTS

This section and subsequent sections will define and discuss those personnel and training events that require management direction. These events typically would include the following:

- o Prepare personnel and training portion of logistics support capabilities estimate
- o Make preliminary estimate of skill requirements
- o Establish personnel and training concept
- o Develop personnel and training plan requirements
- o Establish personnel and training program evaluation criteria
- o Evaluate proposed personnel and training requirements
- o Approve personnel and training plans
- o Determine personnel availability (continuous)
- o Prepare training package
- o Begin instructor training
- o Begin operations and maintenance personnel training (continuous)
- o Update personnel and training requirements
- o Verify required skill levels
- o Verify availability of trained personnel for operations and maintenance
- o Update personnel and training plan
- o Identify personnel and training deficiencies
- o Update training package
- o Conduct additional operations and maintenance training

11.0

FUNDING

This section discusses timely determination and allocation of funds for required support, including but not limited to program review and approval points, as delineated in contract commitments and for in-house needs. Inclusion of this section is left to the discretion of the SAIL project office.

11.1

12.0

MANAGEMENT DATA

This section includes requirements for collection of such data as failure rates, stock and consumption rates and records, and other property accounting data.

12.1

MANAGEMENT DATA EVENTS

This section and subsequent sections will define and discuss management data events requiring management direction. These events typically include the following:

- o Input readiness performance experience (from data attained on similar in-service equipment)
- o Input usage experience into supply model
- o Establish support data requirements
- o Prepare data collection, analysis and control requirements
- o Specify data requirements for bid package
- o Evaluate data collection and analysis proposals
- o Update data specifications
- o Update data collection, analysis and control plan
- o Develop standard system/equipment support codes
- o Perform collection and analysis of test feedback data
- o Update data collection and analyses plan
- o Collect and disseminate test data